

William T. O'Connor, Jr.  
Vice President, Nuclear Generation

Fermi 2  
6400 North Dixie Hwy., Newport, Michigan 48166  
Tel 734-586-5201 Fax: 734-586-4172

**DTE Energy**



10CFR50.73

August 26, 2002  
NRC-02-0066

U S Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington D C 20555

Reference: Fermi 2  
NRC Docket No. 50-341  
NRC License No. NPF-43

Subject: Licensee Event Report (LER) No. 02-003

Pursuant to 10 CFR 50.73(a)(2)(v)(D), Detroit Edison is submitting the enclosed LER No. 02-003. This LER documents the breaching of Control Room Emergency Filtration (CREF) system ductwork integrity.

No commitments are being made in this LER.

Should you have any questions or require additional information, please contact Mr. Norman K. Peterson of my staff at (734) 586-4258.

Sincerely,



cc: T. J. Kim  
M. A. Ring  
M. V. Yudas, Jr.  
NRC Resident Office  
Region III  
Regional Administrator, Region III  
Wayne County Emergency Management Division

IE02

Estimated burden per response to comply with this mandatory information collection request 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to [brs1@nrc.gov](mailto:brs1@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

### LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

<b>1. FACILITY NAME</b> Fermi 2	<b>2. DOCKET NUMBER</b> 05000341	<b>3. PAGE</b> 1 OF 5
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**4. Title Breaching of Control Room Emergency Filtration (CREF) System Ductwork Integrity**

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED																																																			
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**12. LICENSEE CONTACT FOR THIS LER**

NAME Hari O. Arora, Principal Engineer, Licensing	TELEPHONE NUMBER (Include Area Code) 734-586-4213
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**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

<b>14. SUPPLEMENTAL REPORT EXPECTED</b>	<b>15. EXPECTED SUBMISSION DATE</b>	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE). <input checked="" type="checkbox"/> NO <input type="checkbox"/>				

**16. ABSTRACT** (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On June 27, 2002, Division 1 Control Room Emergency Filtration (CREF) system was started to support a Post Maintenance Test. Following the system start, a Nuclear Operator reported unusual noise from the Division 1 Control Center Heating, Ventilation and Air Conditioning (CCHVAC) Return Air Fan. Vibration analysis concluded that the most probable cause was a failing fan outboard bearing. The fan was shutdown and Division 1 CREF system was declared inoperable. A work request was initiated which identified the need to open an access panel in the fan ductwork. The access panel had to be unlocked and opened to allow access to the fan outboard bearing. The work request was reviewed and authorized by Operations. At 2152 hours, control room pressure increased and control room pressure alarms were received. A Nuclear Operator was dispatched to evaluate the Division 1 CREF system maintenance activities and noted that the access panel was open. Evaluation of the pressure response of the Division 2 CREF system identified that opening the access panel on the Division 1 Return Air Fan duct work resulted in unfiltered, bypass leakage into the Division 2 CREF system. Technical Specification 3.0.3 was entered due to both divisions of CREF system being inoperable. Immediate actions were taken to close the access panel and reestablish CREF system ducting integrity. Analysis of the event identified deficient knowledge of CREF system divisional interrelationship and inadequate implementation of the work control process as the causes.

**LICENSEE EVENT REPORT (LER)**

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7. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

**Initial Plant Conditions:**

Mode 1 (Power Operation)  
 Reactor Power 100 percent  
 Reactor Pressure 1023 psig  
 Reactor Temperature 540 Degrees Fahrenheit

**Description of the Event:**

On June 27, 2002, the Division 1 CREF system was started to support Post Maintenance Testing (PMT) on the Division 1 CREF system Emergency Air North Inlet Radiation Monitor Flow Switch. During the PMT, a Nuclear Operator (NO) reported an unusual noise from the Division 1 CCHVAC Return Air Fan. Vibration analysis identified the most probable cause to be a failing fan outboard bearing. At 1458 hours, the Division 1 CREF system was declared inoperable and shutdown. Technical Specification 3.7.3, Action A was entered.

A Work Control Planner began working on a high priority emergent work request at approximately 1530 hours and discussed the scope of the work package with the System Engineer. The Planner identified that Maintenance would have to open an access panel to allow work to be performed on the fan outboard bearing. The access panel was not labeled and it was not understood that opening the access panel would result in unfiltered in-leakage to the operating division of the CREF system.

The system was tagged by Operations and Maintenance performed a walkdown of the job. No significant problems were noted during the walkdown. However, the work package had not been reviewed by Maintenance prior to the walkdown because the package was in the planning process.

The Planner completed preparing the work package at approximately 2000 hours and gave the package to Maintenance. The Maintenance Foreman conducted a pre-job brief for maintenance personnel. The work package was then taken to the Research Tagging Center for Operations review and approval. The work request was reviewed and approved by the Shift Engineer (SE).

Maintenance began working at approximately 2140 hours. At 2152 hours, the Control Room received Division 1 and 2 Control Room high pressure alarms. Control Room pressure was noted to have a step increase from plus 0.2 inches water column to 0.45 inches water column. A NO was dispatched to evaluate the Divisions 1 and 2 CREF systems and the ongoing maintenance. The only noted difference in the system was the open access panel. At 2222 hours, the access panel was closed and the Main Control Room pressure returned to normal.

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**7. NARRATIVE** (If more space is required, use additional copies of NRC Form 366A)

An evaluation of the pressure response of the CREF system identified that opening the access panel resulted in unfiltered, bypass leakage into the Division 2 CREF system. Technical Specification 3.0.3 was entered in accordance with Technical Specification 3.7.3, Action D at 2152 hours and exited at 2222 hours while both divisions of the CREF system were inoperable. No power reduction occurred.

**Cause of the Event:**

Analysis of the event identified deficient knowledge of the CREF system divisional interrelationship and inadequate implementation of the work control process as the causes. The access panel is within the Control Room envelope and it was not readily apparent to System Engineering and Operations personnel involved that the access panel removal would result in unfiltered in-leakage. Therefore, the impact on CREF system operability with the access panel open was not understood or evaluated prior to this event.

Inadequate implementation of the work control process resulted in missed opportunities to recognize the full impact of the work request upon the plant configuration such as:

- The Planner did not perform a job walkdown and field verification
- The Planner did not discuss the work scope with Operations during package preparation
- The work package was not reviewed by Maintenance prior to performing a walkdown of the work package
- System Engineering and Operations Work Control were not listed as required reviewers
- Operations Work Control did not review the work request cover sheet and impact statement and the Shift Engineer did not apply peer checking techniques.

Although the Work Control procedure provides the latitude during the work request preparation process to determine the required steps needed to process an urgent work request, it is expected that all work packages receive the same level of scrutiny regardless of work request priority.

**Analysis of the Event:**

The Control Room envelope was breached during the work on Division 1 CCHVAC Return Air Fan for approximately 30 minutes. Based on a review of the UFSAR Chapter 15 safety analyses, those events which could result in control room doses that exceed General Design Criteria (GDC) 19 without filtration are the control rod drop accident, the loss of coolant accident (LOCA), the fuel handling accident and the main steam line break (MSLB). These are low probability events, and during the time the CREF system ductwork integrity was breached none of these events actually occurred. Had any of these events occurred while the access panel was open it could have been closed rapidly, eliminating the breach. Additionally during this period the Standby Gas Treatment System was operable and would have performed its design function to protect health and safety of general public.

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**17. NARRATIVE** (If more space is required, use additional copies of NRC Form 366A)

In addition, the Control Room area is equipped with self-contained breathing apparatus equipment, the use of which would be sufficient to mitigate the radiological dose consequences due to iodine intake.

The Purge Mode of the CCHVAC system was able to perform its function with the breach in the Control Room ductwork. In the Purge Mode, 100 percent outside air is circulated through the Control Room and exhausted to the atmosphere to purge any smoke or fumes from the Control Room.

In the Chlorine Mode of CCHVAC, all outside air intakes are closed to prevent ingress during an offsite toxic gas release and ventilating air is recirculated within the control center. However, it has been determined that offsite and onsite toxic gas releases are of such low probability that they are not considered credible events. Therefore, the ability to protect the control room operators from toxic gas events is not adversely affected.

Therefore, this event represents only a degradation of the radiological barrier function provided for the Control Room. This event does not represent a degradation of the barrier function of the Control Room against smoke or toxic atmosphere, or an actual open pathway in the physical integrity of reactor containment or an actual reduction of the atmospheric pressure control function of the reactor containment.

**Corrective Actions:**

Shortly after work began on the fan, the Main Control Room received Division 1 and 2 high pressure alarms and dispatched a NO to the Division 1 Mechanical Equipment Room to investigate. Due to the plant's response to the access panel being open, Operations evaluated the system configuration, stopped the maintenance work on the fan, and restored the access panel at 2222 hours.

Condition Assessment Resolution Document (CARD) 02-16703 was initiated and an Emergent Issues Team was assembled to develop a troubleshooting plan to repair the Division 1 CCHVAC return air fan motor bearing.

Fermi 2 notified the NRC of the event at 0947 hours on June 28, 2002.

Technical Specification Amendment 149 which allows breach of the ductwork for 24 hours using administrative controls was received from NRC on June 28, 2002. This amendment allowed Fermi 2 to enter the CREF system ductwork via the access panel to repair the Division 1 CCHVAC Return Air Fan on July 1, 2002. PMT testing was completed on July 1, 2002 at 2334 hours.

NRC FORM 366AU.S. NUCLEAR REGULATORY COMMISSION  
(7-2001)**LICENSEE EVENT REPORT (LER)**

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**17. NARRATIVE** (If more space is required, use additional copies of NRC Form 366A)

System Engineering will review the CREF system and identify the common ductwork/components which could impact operability. Following identification of common ductwork/components, procedures will be revised to include this information. Specifically, procedure 35.000.242, Barrier Identification/Classification, and SOP 23.413, CCHVAC will be revised to include the identification of the CREF system common ductwork/components. The affected work groups will be trained on the procedure changes following the normal process for identifying training on procedure revisions. The common ductwork/components will be labeled in the field.

Following a second work control event associated with the Core Spray System on July 16, 2002, (CARD 02-16969), interim actions were developed. This included a checklist to identify mechanisms for ensuring a positive control is maintained. The purpose of this checklist is to require a face-to-face communication link between operations and craft. CCHVAC system breaches are specifically included in this interim corrective action. Since the causes of these events are directly related to implementation of the work control process, the work control issues are being addressed simultaneously.

These corrective actions will be tracked and implemented using the established processes and priorities of the corrective action program.

**Additional Information:**

- A. Failed Components: None
- B. Previous LERs on Similar Problems: None